MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

2005 FISH ADVISORY

Our Feature Fish is the **Shovelnose Sturgeon** (picture above). See the Species-Specific Advisory below.

Fish Advisory Summary

The 2005 Fish Consumption Advisory is summarized in the table below. Some new information has been evaluated this year; however, the recommendations regarding fish consumption have not changed appreciably from the 2004 advisory. Please read the entire advisory to learn of continuing evaluations and of trends (local and national) that may influence future advisories.

Contaminant of Concern	Advisory	Species covered
Polychlorinated biphneyls (PCBs) and chlordane	Do not consume Shovelnose Sturgeon or their eggs from the Missouri and Mississippi rivers.	Shovelnose Sturgeon
Mercury	Women who are pregnant, may become pregnant, nursing mothers and children 12 years of age or younger should not consume largemouth bass greater than 12 inches in length from anywhere in Missouri.	Largemouth Bass greater than 12 inches in length
Lead	Do not consume certain fish species found in the Big River in St. Francois and Jefferson counties, the Flat River in St. Francois County from Highway "B", six miles downstream to where it enters the Big River, and sunfish from Big Creek near the town of Glover in Iron County, Missouri.	Sunfish (some times also known as bream or perch), carp, redhorse, and other suckers

Background Information

The Missouri Department of Health and Senior Services (DHSS) is concerned that people eat a healthy diet. Fish is a good source of high-quality protein and essential nutrients that will contribute to a healthy diet if eaten regularly. Fish is low in cholesterol and some types of fish have fats (omega-3 fatty acids) that may be beneficial in reducing heart disease. Along with the potential benefits to eating fish, DHSS also believes it is important to consider any potential risks associated with consuming Missouri sport-caught fish. In association with this goal, the Missouri Department of Conservation (MDC) has conducted extensive annual sampling and analysis of contaminants in Missouri's fish since 1985. The Missouri Department of Natural Resources (MDNR) also conducts fish sampling in cooperation with the U.S. Environmental Protection Agency (EPA). The results of sampling by both agencies are reviewed by the DHSS to determine if eating Missouri fish poses a health risk to the public.

Polychlorinated Biphenyls (PCBs) and Chlordane Advisory

Missouri has never issued a polychlorinated biphenyl (PCB) consumption advisory for any species of fish other than the Shovelnose Sturgeon. In 2001, we removed the advice that recommended people eat no more than one meal a week of catfish, carp, buffalo, drum, suckers and paddlefish from areas outside the Ozark region of the state because levels of chlordane contamination in these fish had gone down in the past few years.

For 2005, DHSS is continuing the PCB consumption advisory for Shovelnose Sturgeon and their eggs. The PCB advisory is based on an evaluation using the Food and Drug Administration (FDA) screening value or health standard for total PCBs. PCBs are found in many fish species on the Mississippi and Missouri rivers; however, the levels of PCBs are below the FDA health standard. Therefore, no other species will be added to the PCB advisory for 2005.

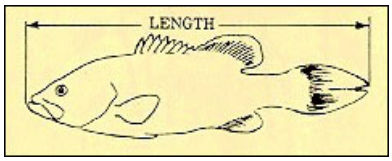
DHSS continuously evaluates the newest toxiological information and guidance available from EPA or other sources. We are presently evaluating the FDA health standard with the possibility of developing a new PCB screening value and consumption tables that are specific to Missouri. This information will be used in conjunction with the new sturgeon fish tissue data collected in 2004 by MDC with the possibility of changing the no-consumption advisory to a limited-consumption advisory next year.

Chlordane levels were also found to be high in some sturgeon tissue samples. Therefore, the advisory originally placed on sturgeon based solely on PCBs is also protective for potential risks posed by chlordane contamination.

Mercury Advisory

In 2001, DHSS issued an advisory because of mercury or, more specifically, methylmercury contamination. Methylmercury is an organic form of mercury that is easily absorbed into the living tissue of aquatic organisms and is not easily eliminated. DHSS had been concerned about mercury contamination in fish for a number of years and had been carefully monitoring the national debate and international health studies related to this issue. These studies indicated that fish with mercury in them at levels similar to those found in Missouri Largemouth Bass that were greater than 12 inches in length could cause children's nervous system development to be slowed down and possibly permanently affected. Results of these studies, and new risk estimates by the U.S. EPA that were based on these

studies, convinced us that **mercury levels in some Missouri fish could pose a possible health risk to our children. Therefore, the DHSS began advising women who are pregnant, who may become pregnant, nursing mothers, and children 12 years of age and younger not to eat any Largemouth Bass over 12 inches in total length from anywhere in Missouri. The reason we are including woman who may become pregnant is because their bodies may take more than a year to significantly reduce amounts of mercury.**

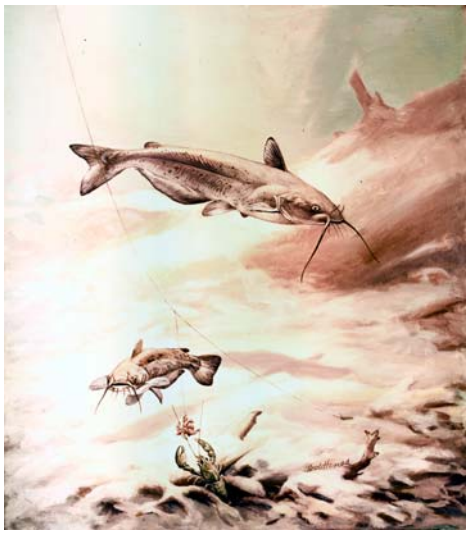


Note: We are presently evaluating the consumption advisory for Largemouth Bass and other recreational fish species to determine if a limited-consumption advisory can be implemented.

Additional mercury information

Sampling and analysis of Largemouth Bass indicate that mercury contamination is widespread, and present in fish in streams, rivers, ponds, and lakes throughout Missouri. The amount of mercury in fish seems to be mostly related to their size and the type of food they eat. For example, large fish that eat other fish have higher concentrations of mercury than smaller fish or fish that eat creatures that live on the bottom. The contamination observed in largemouth bass is widespread in Missouri and that is why our advisory is for the whole state. The MDC and MDNR are committed to the continued collection and analysis of predatory fish such as bass, walleye, and other selected species to determine mercury concentrations. These efforts will provide the Department of Health and Senior Services with the contaminant information necessary to issue additional advisories if the need arises.

The reason that mercury seems to be distributed throughout the state is because of the way it got here. Mercury is a naturally occurring element that has been used by man in many ways for thousands of years. It is found in thermometers, electrical switches, batteries, and is used in many mining and manufacturing processes as well as some cultural and religious practices. Over time, some of this mercury was released or improperly discarded. Today, we are still releasing mercury when we burn municipal trash, when we burn coal to produce electricity, or to heat or power buildings and factories. Once this mercury is released to the atmosphere, it can travel great distances before it settles back to the earth and enters our streams, rivers, ponds or lakes. During its movement among the atmosphere, land, and water, mercury undergoes a series of complex chemical transformations. One of the products of these transformations is the organic form called methylmercury. From there, it is absorbed by microscopic plants and animals, which are eaten by small animals and fish that are in turn eaten by bigger and bigger fish. This causes the mercury to become most concentrated in the largest predator fish, and in much of Missouri that is the Largemouth Bass.



For more information about how mercury is distributed throughout Missouri, see the Missouri Department of Natural Resources' fact sheet titled: "Mercury in Missouri Streams and Lakes," which is available on the Internet at: http://www.dnr.mo.gov/oac/pub2100.pdf

In 2002, mercury was found in the fillets of several fish species. We only have an advisory on Largemouth Bass over 12 inches in length because fish of that size had mercury levels of human health concern. The following table displays sampled fish that had mercury in their fish fillets. If you desire information about the levels of mercury found in a particular fish species, contact the Missouri Department of Health and Senior Services at (573) 751-6160.

Fish with Mercury in Fillets from the State-wide 2002 Fish Contaminant Sampling[1]

Bottom Feeders	Insect/Other Types of Feeders	Predator Fish Feeders
Black Bullhead	Bluegill Sunfish	Bowfin
Blacknose Redhorse	Crappie	Chain Pickerel
Carp	Paddlefish	Largemouth Bass[2]
Catfish	Redear Sunfish	Longnose Gar
Freshwater Drum	Rock Bass	Shadow Bass
Suckers	Trout	Smallmouth Bass
Stonerollers		Spotted Bass
		Walleye
		White Bass

[1] 2002 fish tissue sampling represents the latest information that DHSS has available.
[2] advisory for fish over 12 inches in length.

Starting in the spring of 2004, MDC began a study that will help to develop a new monitoring program to provide better confidence and understanding of contaminants, such as mercury, in game fish species. This study will help improve our knowledge of the range of contaminant concentrations in selected game fish species and improve our fish advisory. This study may eventually be used to develop more targeted advisories.

Nationwide Consumer Information on Mercury

EPA's National Non-commercial Fish Advisory for Mercury

In case of no local advisory, consumers are advised to restrict fish consumption of locally caught fish to **one (1) eight ounce meal a week**.

Because not all waters in the United States are monitored, the noncommercial fish consumption advice is a baseline of protection. This simplified advice balances risks from mercury with the benefits of eating fish. Consumers are encouraged to use more detailed information for the waterbodies on which they fish, and the fish species they consume. Mercury concentrations in fish vary considerably from waterbody to waterbody and region to region. Consumers should, first and foremost, consider any local advisories.

Consumer Advisory for Mercury in Commercial Fish

The **U.S. Food and Drug Administration (FDA) and the U.S. Environmental Protection Agency (EPA)** have also issued a joint consumer advisory (FDA News Release, March 19, 2004) recommending that **women who are pregnant, women of childbearing age who might become pregnant, nursing mothers and young children NOT EAT any shark, swordfish, King Mackerel, or tilefish. They should also LIMIT CONSUMPTION of albacore "white" tuna to no more than six ounces (one average meal) per week because of mercury contamination.**

See the following EPA link for more information: http://www.epa.gov/OST/fish/

Lead Advisory

The DHSS is continuing its advisory for **all species of sunfish (locally known as bream or perch), carp, redhorse, and other suckers found in the Big River in St. Francois and Jefferson counties, the Flat River in St. Francois County from Highway "B", six miles downstream to where it enters the Big River, and sunfish from Big Creek near the town of Glover in Iron County, Missouri.** These fish have been found to contain lead at levels of significant health concern and **should not be eaten**.

Lead-mine waste piles in the area have contaminated the rivers with lead at levels of health concern. **Since 1980, DHSS has recommended people not eat carp, redhorse, or suckers from the Big River downstream from Desloge to the mouth of the river where it enters the Meramec River**. For a few years in the late 1980s, we also found catfish contaminated with lead at levels of health concern. Sampling since 1992, however, indicates that **catfish no longer pose a health risk**. Sunfish were captured and analyzed for the first time in 1993 and were also found to be contaminated. The MDC is continuing to sample fish from these waters and that sampling indicates that sunfish, carp, redhorse, and other suckers in the Big River and Flat River are still contaminated with lead at levels of

health concern. State officials believe that substances released from a nearby lead smelter have contaminated the sunfish in Big Creek near Glover.

Species- and Water-Body-Specific Advisory Summary

Some species of fish in certain water bodies in Missouri are contaminated with chemicals at levels of health concern. ***We recommend you NOT EAT the following fish from these specific waterbodies.***

LARGEMOUTH BASS

Throughout Missouri, Largemouth Bass over 12 inches in total length have been found to be contaminated with **mercury** at levels of health concern to children whose nervous systems are still in a developmental stage. **Therefore, women who are pregnant, who may become pregnant, who are nursing, and children 12 years of age or younger should not eat any Largemouth Bass over 12 inches in length from anywhere in Missouri.** Remember, based on our assessment it is safe and healthy for persons not in the sensitive population mentioned above to consume Largemouth Bass. Also, those individuals in the sensitive population can eat legally caught Largemouth Bass smaller than 12 inches in length, because these fish are younger, they consume smaller prey, and have not consumed enough fish over a long enough time period to have elevated levels of mercury in their bodies.

STURGEON

In the Missouri and Mississippi Rivers. Sturgeon and sturgeon eggs have been found to have a combination of **PCBs** and **chlordane** at levels of health concern, and DHSS recommends they not be consumed based on current information. For next year's advisory, DHSS will review recent sampling conducted by the MDC. Based on the result of our analysis, we may change to a limited-consumption advisory for sturgeon meat and sturgeon eggs for portions of the Missouri and Mississippi rivers. We have not reduced the advisory to certain sections of the two rivers because these fish do not have a restricted home range--they travel great distances (The Fishes of Missouri, William Pflieger 1997). Both chlordane and PCBs in sturgeon remain a human health concern and will remain on our advisory until further notice.

The Pallid Sturgeon is a state-listed endangered species and should not be harvested. The Lake Sturgeon is also an endangered species in Missouri. It is only the Shovelnose Sturgeon that is legal to harvest.

SUNFISH…CARP...REDHORSE...AND OTHER SUCKERS

The Big River in St. Francois and Jefferson counties, and the Flat River in St. Francois County from Highway "B", six miles downstream to where it enters the Big River. These fish have been found to contain **lead** at levels of health concern, and should not be eaten.

SUNFISH

Big Creek in Iron County near Glover, Missouri. These fish have been found to contain **lead** at levels of health concern, and should not be eaten.

For the rest of the state, use the following guidelines when deciding how much and what species of fish to eat.

CATFISH…CARP…BUFFALO…DRUM…SUCKERS…PADDLEFISH

Except for the areas mentioned above, we have removed our recommendation to restrict consumption of these fish. Therefore, except for carp, redhorse, and suckers in the Big River in St. Francois and Jefferson counties, and the Flat River in St. Francois County from Highway "B", six miles downstream to where it enters the Big River (as discussed above) **these fish may be eaten in any amount.**

SMALLMOUTH BASS...SUNFISH...CRAPPIE...TROUT

Some fish such as Smallmouth Bass, sunfish, and crappie are lower in fat and less likely to contain contaminants than the fish discussed previously. We feel you may eat as much of these types of fish from anywhere in Missouri as often as you like, except sunfish from the Big River and Flat River and from Big Creek in Iron County, discussed previously. Trout, even though they contain high levels of fat, are also safe to eat from anywhere in the state.

Note: We are evaluating the Smallmouth Bass for possible inclusion into the mercury advisory. **As stated in the National Fish Advisory, in the absence of a local advisory, predatory fish should be consumed at rate of one (1) eight ounce (uncooked) meal per week**. For more information go to: http://www.epa.gov/waterscience/fishadvice/1-meal-per-week.pdf

ALL FISH - ALL AREAS

Smaller fish have lower levels of contamination than larger fish of the same species. Eat the smaller legal fish and release the lunkers so they can fight another day.

If warning signs are posted, follow those guidelines. **These specific warnings are special cases**.

The levels of some chemicals in any of the fish you eat can be reduced by carefully trimming away the fat when the fish is cleaned (See attached trimming and cooking guide). **Note: Trimming fat <u>will</u> <u>not</u> reduce lead or mercury contamination. Cooking cannot eliminate mercury and lead.**

If these guidelines are followed, you will minimize your potential health risks, but in an industrial society like ours, there are numerous health risks. Approximately one person out of three or four will get some type of cancer in their lifetime, and unfortunately, some children's nervous systems will be adversely affected. The cause may be from a family history of cancer, radiation from the sun, lifestyle exposures such as smoking cigarettes or chewing tobacco, man-made chemicals, naturally occurring chemicals or other known or unknown causes. We believe that in comparison to all these other risks, the benefits of eating fish greatly outweigh the risks.

TRIMMING AND COOKING YOUR FISH TO REDUCE FAT AND CHEMICAL CONTAMINANTS

1. Fillet your fish, or if cooking with the bones in, remove all internal organs.

2. Trim away fatty portions of the fish such as the dorsal, lateral, and belly area. (See diagram below.)

3. Remove the skin from your fish.

4. Do not eat the eggs. They are very high in fat.

5. Bake, grill, or broil your fish on a rack and let the fat drip away. Do not use the juices. Avoid pan-frying in butter or animal fat, or making soups or chowders. These methods retain fat-laden juices. If you deep-fry your fish, do not reuse the oil. Contaminants will become concentrated in that oil.

6. Trimming fat or special cooking methods <u>will</u> <u>not</u> reduce the levels of metals, such as lead or mercury, from fish.